

NOTES ON CHARACINOID FISHES WITH CTENOID SCALES,  
WITH A DESCRIPTION OF A NEW PSECTROGASTER.

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DURING a recent examination of the Characinoid fishes of the United States National Museum, I found a Curimatine which I at once recognized as related to the long-known *Anodus* or *Curimatus ciliatus*, but which was much slenderer and apparently undescribed. The roughness of the body arrested immediate attention and brought up to my mind a late article by an ichthyologist of deserved eminence calling attention to the presence of ctenoid scales in an African representative of the family as peculiar.

I.

The existence of ctenoid scales in several Characinids has long been recorded. In 1845 Müller and Troschel named one species *Anodus ciliatus*<sup>1</sup> on account of such scales. In 1861 the present writer called attention to their presence in an ally of *Xiphostoma*, and gave the name *Ctenolucius* to commemorate the character.<sup>2</sup> In 1885 Sagemehl referred to the development of ctenoid scales in *Curimatus*, *Xiphostoma* and *Distichodus*.<sup>3</sup> In 1889 Dr. and Mrs. Eigenmann recognized ctenoid scales in some species of typical *Curimati*.<sup>4</sup> Finally, in 1893, Professor Vaillant described and illustrated the squamation of the *Nanethiops uniteniatus*, from Western Africa.<sup>5</sup> Ctenoid scales have therefore been found to have become developed in representatives of no less than four distinct subfamilies, Curimatinae, Hydrocyoninae, Distichodontinae and Tetragonopterinae, while most of the members of the three polytypic subfamilies have cycloid scales.<sup>6</sup> It follows that in each case ctenoid

<sup>1</sup> Horæ Ichthyologicae, I, p. 25, pl. IV, fig. 4 (scale).

<sup>2</sup> A Catalogue of the Fishes of the Eastern Coast of North America, p. 8, 1861.

<sup>3</sup> Morph. Jahrbuch, X, p. 2, 1885.

<sup>4</sup> Various other Curimatines with ctenoid scales have been described by Steindachner and the Eigenmanns.

<sup>5</sup> Bull. Soc. Philomathique de Paris, (8) V, p. 13, 1893.

<sup>6</sup> *Distichodus* is the only representative of the Distichodontinae.

scales have been developed independently and in forms by no means closely related. Each of the genera in question manifests peculiarities in the development of the ciliation or ctenoid type.

## II.

The new species of Curimatinae belongs to the genus named *Psectrogaster* by Professor and Mrs. Eigenmann, and may be intercalated in the "Analysis of the Species" recognized<sup>1</sup> by them with the following characters:

- a<sup>2</sup>. "Origin of dorsal about equidistant between tip of snout and base of upper caudal fulcra. Origin of ventrals nearer to base of caudal than to tip of snout.
- b. Body "rhomboidal, the dorsal and ventral outlines making angles at the origin of the dorsal and of the ventral fins;" scales,  $55\frac{1}{5}$ ... *rhomboides*.
- bb. Body salmoniform, the dorsal and ventral outlines being regularly convex; scales  $54-55\frac{1}{10}$ ..... *auratus*.
- aa. "Origin of dorsal about equidistant from tip of snout and from tip of adipose fin.
- c. "Depth ♂ and ♀ about  $2\frac{1}{4}$ ; Lat. 1. 49-56"..... *amazonicus*.
- cc. "Depth ♀  $2\frac{1}{6}$ ; scales 56; profile convex..... *ciliatus*.

Such would be the position of the *P. auratus* on the assumption that the primary characters have already been indicated, but in fact the new species seems to be more differentiated from all the others than any one of them is from the other, and the following analysis would appear to be more nearly expressive of the comparative divergence of the several species:

- a. Depth of body  $1:2\frac{1}{6}-2\frac{3}{8}$ ; color "plumbeous above, gradually becoming lighter below; a dusky area...at end of lateral line."<sup>3</sup>
- b. Depth  $2\frac{1}{4}-2\frac{3}{8}$ ..... *rhomboides*.
- bb. Depth  $2\frac{1}{4}$ ..... *amazonicus*.
- bbb. Depth  $2\frac{3}{8}$  ♂ -  $2\frac{1}{6}$  ♀..... *ciliatus*.
- a. Depth of body  $1:2\frac{3}{8}$ ; color golden immaculate..... *auratus*.

<sup>1</sup>A Revision of the Edentulous Genera of Curimatinae, etc. < Ann. N. Y. Acad. Sci., IV, pp. 409-440, 1889. A most useful summary of our knowledge of the group.

<sup>2</sup>The categories "a" and "aa" are primarily distinguished by the Eigenmanns by the (a) "air bladder extending to origin of anal" contrasted with the (aa) "air bladder extending to posterior end of anal," but as there is only a single specimen of the new species, the rules of the Museum preclude dissection to reveal the character in the species now to be described.

<sup>3</sup>The Eigenmanns describe the color only in *P. rhomboides*, but declare that *P. amazonicus* "agrees in almost all respects with *P. rhomboides*," and that the male of *P. ciliatus* "can not be told from specimens of *P. amazonicus*." Müller and Troschel call the color of *P. ciliatus* "metallischen schillernd."

## III.

This new species has been in the collection of the United States National Museum for many years, the single specimen being recorded as collected by Lieutenant Gibbon in Bolivia. The specimen is about  $5\frac{1}{2}$  inches long and is in good preservation, except the vertical fins, which are broken. The color is so striking that I experienced doubt whether it was real, but I know of no agency which would produce such a hue, and other specimens collected by the same officer offer nothing peculiar in such respects.

## PSECTROGASTER AURATUS, new species.

Depth 1 by  $2\frac{3}{4}$ ; head 1:3;<sup>1</sup> D. 12;<sup>2</sup> A. 10; P. 15; V. 9.

Body elongate and salmoniform, with the dorsal contour not angulate but convex from axilla of dorsal to nape, and the ventral contour regularly arched from axilla of anal to chin; preventral region transversely convex and postventral keel well defined. Head oblong, with the profile nearly straight and declivous and nearly flat at middle. Eye with narrow anterior and posterior adipose lids, with its vertical diameter less than snout and half the interorbital area. Scales all deeply pectinate, and slightly reflected from the body, largest on the sides of the abdomen, much smaller on the back and nape, and extending on the base of caudal. Dorsal at its first ray midway between tip of snout and base of caudal fulera. Adipose narrow and rather long. Anal moderate, emarginate. Caudal with extended lobes nearly or quite three times longer than entire median rays and with the inner margins straight or concave. Pectorals nearly reaching to ventrals. Ventrals reaching about two-thirds the way to anal and under first half of dorsal, with root of first ray as near base of caudal as front of eye. Color golden, with rufous suffusion on back and without spots.

*P. auratus* appears to be the most distinct species of the genus. The coarsely pectinated uplifted scales<sup>3</sup> and the golden color remind one somewhat of a holocentrid.

## IV.

*Relations of the toothless Curimatines.*—A review of the several genera of edentulous Curimatines leads me to believe that they have diverged from a common stock most like *Curimata* but with branchial rakers, and their degrees of divergence may be expressed in the following manner:

<sup>1</sup> The length is exclusive of caudal fin.

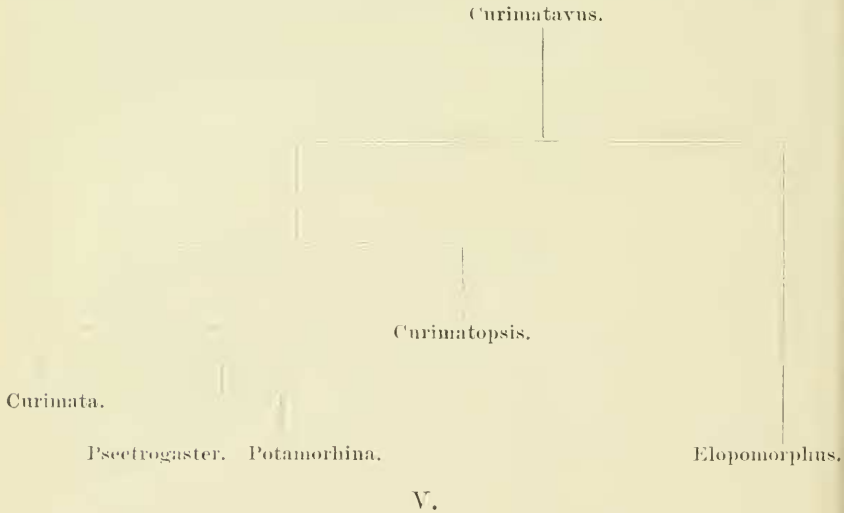
<sup>2</sup> The rudimentary first dorsal and anal rays are included.

<sup>3</sup> Mud had been retained on the inner field of some of these scales in the specimen preserved.

ANALYTICAL KEY TO THE GENERA OF EDENTULOUS CURIMATINES.<sup>1</sup>

- a. Gill arches with obsolete or no rakers.
- b. Tongue "short and thick," adnate.
  - c. Postventral region with a median row of scales; scales mostly cycloid. *Curimata*.
  - c. Postventral region with two lateral overlapping rows of scales; scales pectinate.
  - d. Preventral region transversely convex and not distinctly limited. *Psectrogaster*.
  - dd. Preventral "region flat" and bordered on each side by a serrated keel extending from the pectoral to the outer ray of the ventral. *Potamorhina*.
- bb. Tongue long and narrow, quite free<sup>2</sup>..... *Curimatopsis*.
- aa. Gill arches with long, slender rakers ..... *Elopomorphus*.

In other terms, while the typical Curimatine series has lost the gill rakers, it has diverged most in other respects from the common progenitors, while *Elopomorphus* has developed gill rakers of increased size and added other striking characters. In a genealogical table the supposed facts may be thus represented:



The chief of the Curimatine genera has been generally called *Curimatus*, but the name should be spelled *Curimata*, as the following early synonymy shows:

<sup>1</sup>For all other characters, see Steindachner, Ich. Beitr., V, p. 34, 1876.

I have accepted the genera and, in several cases, the language of Professor and Mrs. Eigenmann, who, in the analysis of their valuable Revision of the Edentulous Genera of Curimatinae, have arranged the genera in the following sequence: *Anodus* (= *Elopomorphus*), *Potamorhina*, *Psectrogaster*, *Curimatopsis*, *Curimatus*. Later they adopted the name *Elopomorphus* in place of *Anodus* (Proc. U. S. Nat. Mus., XIV, 1891, p. 46).

## Genus CURIMATA.

- < *Curimates*, CUVIER, Mem. Mus. Hist. Nat., I, p. 109 (French name only, unaccompanied by diagnosis or name of type), 1815.  
< *Les Curimates*, CUVIER, Règne Animal, II, p. 165, 1817; 2<sup>e</sup> ed., II, p. 309, 1829.  
< *Curimata*, CLOQUET, Dict. Hist. Nat., XI, p. 240, 1818.  
< *Curimates*, GOLDFUSS, Hand. Zool., II, p. 24, 1820.  
< *Anodus*, AGASSIZ, Sel. Gen. et Sp. Pisc. Brasil., p. 60, 1829.  
< *Characinus*, MINDING, Lehrb. Nat. Fische, p. 119,<sup>1</sup> 1832.  
< *Curimatus*, VALENCIENNES, Hist. Nat. Poissons, XX, p. 4, etc., 1849.

The type, by elimination, is *C. edentula*=*cyprinoides*.

<sup>1</sup> Mund wenig gespalten, Zähne klein wie bei den vorigen (i. e., *Choregon*=*Coregonus*+*Thymallus*). *C. curimata* is the only species named.